The Advent of ICT in Higher Education and Its Implications

Anupama Singh
Sibpur Ambika Hindi High School, Howrah, India

Abstract

The introduction of ICT in the last two decades or so in India has brought about enormous changes in every sphere of life and especially in the field of education. This new digital technology has become inevitable and essential and it promises revolutionary benefits for the present and future. But along the way it also poses certain challenges which need to be addressed holistically in effective ways in order to keep pace with the rest of the world and ensure a robust system. This paper takes an overview of the present state of ICT in India and discusses the core issues relating to planning and implementation.

[**Keywords**: ICT, digital technology, educational policy, technology integration]

Since the constitution of the Education Commission (1964-66) it has been nationally recognized and acknowledged that education is a powerful instrument of social transformation and nation building. Education is seen critical for poverty alleviation, reduction of inequalities, and promotion of social harmony and strengthening of national unity. Education is seen imperative for increasing productivity, consolidating democracy, modernizing the country and developing scientific, moral and spiritual values.

India has one of the biggest systems of education with a total enrolment of 189.2 million, with 81.1 million girl students and 5.45 million teachers in schools, nearly 10 million students in 350 universities and 15,000 colleges and 420,000 teachers. This includes 11 open universities and 104 distance education institutions of dual mode; and the Open University system has an enrolment of about 20 percent of the total. The rate of growth since Independence is quite high, coverage has increased, dropout rate has reduced, and the percentage of girl students in education is increasing.

The introduction of Information and Communications Technology (ICT) in education reflects and responds to present and future needs of people functioning in an intensely changing and challenging intellectual environment. Since the advent of the computer, the internet and the web numerous changes have occurred. The presence of IT has actually transformed the teaching, learning and administrative environment in post-secondary education worldwide and in order to keep pace with the rapidly changing landscapes it has become inevitable to implement technology integration.

What is Technology Integration?

"Technology Integration is the use of technology resources, that is, Computers, Internet, e-mail, Digital Cameras, CD-ROMs, Software Applications, and Electronic Publications etc. in daily classroom practices, and in the management of a college."[i] A very vital question may arise here: what role can technology play in the field of education? Theoretically speaking, technology (1) helps change the student/teacher roles and relationships, (2) cannot teach; only teacher can

teach, (3) can enhance the teaching-learning process. But technology is continuously changing. "The acceptance of change is a major requirement for technology integration. It is an ongoing process. It demands continual learning. Change is not always easy. The initial human reaction to change is resistance. Resistance makes for slow change, but change is inevitable.[ii] In the wake of all these developments technology integration becomes important. The following are the reasons for integrating technology in the field of education:

1) Technology has completely revolutionized the way we think, work and play;
2) Technology enables teachers to provide multiple representations of content (images, graphs, diagrams, tables etc.) and multiple options for expressions (multimedia);
3) Computer technology has changed the traditional classroom instructional techniques;
4) Computers enable students to process the information via multiple intelligences;

5) As The George Lucas Educational Foundation states: "technology integration is the necessity of today's students to have 21st Century Skills. These 21st Century Skills include:

- Personal and social responsibility
- Planning critical thinking, reasoning and creativity
- Strong communication skills, both for interpersonal and presentation needs
- Visualizing and decision –making
- Knowing how and when to use technology and choosing the most appropriate tool for the task."[iii]

All these started in the developed countries but gradually the principle was incorporated in the developing countries rapidly with the introduction of internet. "These technologies have not only revolutionized data processing and administrative tasks but also created new forms of interpersonal communication. The opportunity to connect and be connected has forged new frontiers in the development and transference of knowledge. Additionally, the emergence of social media technologies has brought an exciting new wave of innovation and opportunity to educators and administrators across the university campus."[iv]

The Indian Context

The Education Commission recommendations on correspondence education later took the form of open and distance education, and added non-formal mode to the system of formal education. The commission could not have anticipated the rapid development of Information and Communication Technology leading to networking of people and places all over the globe, has created a situation for the development of the post-industrialization society. This new technology offers tools and equipments, which enable decentralization and mass participation on an unprecedented scale. These processes are typical of the information age and have no resemblance to any of the industrial and agrarian era. However, the ideas of the Education Commission rooted in the development of the people, democratic decentralization, people's participation, and the bottom up approach have greater relevance in the Information Age.

The EC recommended the establishment of a National Council of Home Studies for the purpose of accreditation and evaluation of agencies, and also for supporting research, development and deployment of content. The establishment of the IGNOU and NOS is a major step in implementing the EC recommendations. The IGNOU has pioneered the use of satellite communication and broadcasting in open and distance education. Since 1995, the IGNOU had used the distributed classroom with one-way video and two-way audio for distance education. It is supporting and coordinating broadcasting of four national channels for education in India.

Table 1: National media and Capacity of IGNOU[v]

Media and Technology	Number
Satellite Transponder	1
Teleconferencing Centres	790(TO INCREASE TO 2000)
National TV Channels	6 (including teleconferencing channel)
All India Radio Stations	186 (Interactive Radio Counselling)
Tele-learning Centres	22
FM Radio Stations	17(to increase to 40)
Satellite	1 (Edusat)

The Indian Educational Satellite (EduSat, launched by ISRO) in September 2004 with 13 transponders with 5 beams in ku-band covering 5 regions of India (Central, Eastern, Western, Northern, and Southern) and one for all India coverage, which makes Direct to home (DTH) education possible. The Educate helps creating distributed classrooms and network of school and higher education institutions for offering quality education for all. However, this vision and perspective created is yet to be realized. Besides the IGNOU, there are three state open universities which are getting up-linking and TV channel support from the ISRO.

Table 2: State and national Open University Resources (2003-2004)[vi]

Indicators	IGNOU	Other State OU	Total
Programmes	101	340	441
Courses	900	2963	3863
Student registered (000)	366.1	557.6	923.7
Students on roll (000)	1311	1562	2873
Regional Centre and Sub-regional centre	54/23	57/88	111
Study centres	1257	3131	4388
Academic counselors	33,366	31,472	64,838
Audio	1293	1011	2304
Video	1792	496	2288
Staff	1369	2208	3777

Growth and Promotion of IT in India

India entered the IT scene in popular mode in the 90s and a lot of things suddenly started to happen. Along with the governmental and institutional initiatives various companies started providing training on commercial scale. But IT got major bust from the year 2000 onwards with the introduction of mobile technology. A number of terms like internet, computer, emails and mobile phones entered the popular vocabulary. All understood that the new technology can play a huge role in introducing new forms of teaching-learning methods and tools.

One of the major issues in linking education with development is its model and its suitability to Indian needs, context and culture. The Makinley Report based on the studies

conducted at the behest of the NASSCOM predicts robust growth for the Indian IT services and IT enabled Services Industry. It is expected to exceed US$ 57billion in exports by 2012.Further, it is expected that the Indian Companies would eventually move up from the BPO (Business Process Outsourcing) or Call Centers to KPO (Knowledge Process Outsourcing). The IT industry's growth has multiple effects on India because of the rising class of younger consumers with high disposable income. The IT has helped spawning of ancillary businesses such as transportation, real estate, communication and catering, and created quite high employment opportunities, particularly for the engineers, graduates and for the professionally qualified. Reasons attributed to this growth are due to leadership with strong foundation of:

1) Large pool of English speaking manpower, and
2) Emphasis on quality at significantly low costs.

Information Technology applications are fast spreading in India. Mobile telephony is one of the sectors witnessing very fast growth and is expected to cross 500 million consumers by 2012. The broadband connectivity is expanding fast through optical fiber as well as through wireless internet. The Indian Government is supporting the IT Industry by creating infrastructure development, attracting investment by reducing corporate taxes, and by setting up Knowledge Commission to support IT related development.

The rapid development of newer and versatile technologies in IT is expected to change the nature of communication. The technologies such as development of high fidelity Internet that can deliver "immersive" technologies and nano technologies are going to change the face of communication technology. All these developments would have a profound impact on education. The IT would enable development of mass-personalized education with just-in-time learning services. Education could be linked with places of living and working of anyone anywhere. Education, if developed properly with ICT support, could be a great equalizer.

ICT and Changing Mindsets in Education

While ICT promises huge potential for education, there is also a cautionary aspect to it. Experts believe that policies should be formulated with extreme care at all levels regarding its implementation, especially in a developing country like India which suffers terribly from "digital divide". "However, new technologies such as Internet and Computers are often introduced and sometimes even parachuted into schools in ways that do not enhance learning, that promote automated thinking instead of critical thinking, that encourage dependency rather than autonomy. Too often, the emphasis is on equipment, o n making profits from schools, or on promises of modernity than on opportunities for teachers to learn and experiment effective use of technologies to enhance teaching and learning processes. Ministries of education have been all too eager to import computers into schools, without putting in place a policy environment and curriculum that supports the integration of technology into teaching and in ways that ensure equitable access."[vii]

ICT, when appropriately used, can serve as a vehicle and a platform for meaningful educational reform geared towards a shift from didactic "instructionism" to "constructivism". However, literature review and empirical evidence reveals that integration of ICT remains sporadic and without clear direction. Access to ICT by students and teachers has begun, yet its use supports traditional teaching rather than the shift to new roles and pedagogical practices. Policy implications include the need to develop expertise within the nation, provide training opportunities and encourage initiative and innovation on the part of the teachers.

Notes

[i] Victor, B. "ICT-centred Teaching Learning". http://www.slideshare.net/biovictor/ict-centered-teaching-learning.

[ii] Technology Integration, Wharton. http://www.edutopia.org/technology-integration-guide-description.

[iii] "Technology integration", The George Lucas Educational Foundation.
http://www.edutopia.org/teachingmodules/TI/Why.php

[iv] Charles Wankel, *Higher Education Administrtation With Social Media: Including Applications in Student Affairs, Enrollment Management, Alumni Affairs and Career Centers,* Emerald Group Publishing, 2011, p.ix.

[v] S. Garg et al (Eds.) (2006) *Four Decades of Distance Education in India: Reflections on Policy and Practice*. New Delhi: Viva Books.

[vi] Ibid

[vii] Toure, K. (2008). Introduction: ICT and Changing Mindsets in Education. In K. Toure, T.M.S. Tchombe, & T. Karsenti (Eds.), ICT and Changing Mindsets in Education. Bamenda, Cameroon: Langaa; Bamako, Mali:ERNWACA / ROCARE.

Bibliography

Azad,J.L. Changing Complexion of Higher Education –A study of the Impact of Emerging Socio-economic Configuration, University News,AIU,New Delhi,March13,2000.

Assie-Lumumba,N'Dri Therese.Cyberspace, Distance Learning, and Higher Education: Old and Emergent Issues of Access, Pedagogy, and Knowledge Production,Brill Academic Publishers, 2004.

Chauhan,C.P.S.Contemporary Issues in Higher Education, University News,AIU,New Delhi,Dec.4,2000.

Chauhan, C.P.S.Modern Indian Education, Kanishka Publishers, New Delhi, 2004

Deshmukh, K.G.Universities and Higher Education in the 21st Century, University News, AIU, New Delhi, July13, 1998.

Khan,A.W.Distance Education in the Twenty-first century, in The World of Distance and Open Learning, by Venugopal Reddy V. and Manjulika S.(Ed.),Viva Books Pvt Ltd. New Delhi,2000.

Levin, JohnS.Globalizing the Community College: Strategies for Change in the Twenty-first Century, Palgrave Macmillan, London, 2002.

Powar, K.B. Higher Education in the Twenty-first Century, University News ,AIU,New Delhi,December4,2000.

Sharma, Dhiraj.Communication in IT Age, Himalaya Publishing House, New Delhi, 2010.

Venugopal Reddy V.and Manjulika S. Distance Education in India: A Model for Developing Countries,Vikas Publishing House Pvt.Ltd. New Delhi, 1996.

Wankel, Charles.Cutting-Edge Technologies in Higher Education, Vol.1: Educating Educators with Social Media, Emerald Group Publishing Ltd.2011. Knowledge Society on the basis of equity and justice.

Anupama Singh is Assistant Teacher, Sibpur Ambika Hindi High School, Howrah. Email: achoubey76@gmail.com